WHAT IS CLAIMED IS:

1. A therapeutic composition comprising a therapeutically-effective concentration of one or more non-pathogenic, lactic acid-producing bacterial species or strains within a pharmaceutically-acceptable carrier suitable for administration to the gastrointestinal tract of a vertebrate, wherein said lactic acid-producing bacterial species or strain possesses the ability to increase the solubility and bioavailability of nutritional materials within the gastrointestinal tract of an animal or, preferably, a human.

2. The therapeutic composition of claim 1, wherein said non-pathogenic, lactic acid-producing bacterial species or strain is a *Bacillus* bacterial species which is selected from a group comprising: *Bacillus coagulans*; *Bacillus coagulans Hammer*; *Bacillus brevis* subspecies *coagulans, Bacillus subtilis*, *Bacillus uniflagellatus*, *Bacillus lateropsorus*, *Bacillus laterosporus* BOD, *Bacillus megaterium*, *Bacillus polymyxa*, *Bacillus licheniformis*, *Bacillus pumilus*, and *Bacillus sterothermophilus*, and any genetic variants thereof.

3. The therapeutic composition of claim 1, wherein said non-pathogenic, lactic acid-producing bacterial species or strain is a *Lactobacillus* bacterial species which is selected from a group comprising: *Lactobacillus acidophilus*, *Lactobacillus casei*, *Lactobacillus DDS-1*, *Lactobacillus GG*, *Lactobacillus rhamnosus*, *Lactobacillus plantarum*, *Lactobacillus reuteri*, *Lactobacillus gasserti*, *Lactobacillus jensenii*, *Lactobacillus delbruekii*, *Lactobacillus, bulgaricus*, *Lactobacillus salivarius* and *Lactobacillus sporogenes* (also designated as *Bacillus coagulans*), and any genetic variants thereof.

4. The therapeutic composition of claim 1, wherein said non-pathogenic, lactic acid-producing bacterial species or strain is a *Sporolactobacillus* bacterial species which is selected from a group comprising: all *Sporolactobacillus* species, for example, *Sporolactobacillus* P44, and any genetic variants thereof.

5. The therapeutic composition of claim 1, wherein said non-pathogenic, lactic acid-producing bacterial species or strain is a *Bifidiobacterium* bacterial species which is selected from a group comprising: *Bifidiobacterium adolescentis*, *Bifidiobacterium animalis*,

Bifidiobacterium bifidum, *Bifidiobacterium bifidus*, *Bifidiobacterium breve*, *Bifidiobacterium infantis*, *Bifidiobacterium infantis*, *Bifidiobacterium longum*, and any genetic variants thereof.

6. A therapeutic composition comprising a therapeutically-effective concentration of one or more strains of the non-pathogenic, lactic acid-producing bacteria *Bacillus coagulans*; wherein said *Bacillus coagulans* bacterial strain are selected from a group comprising *Bacillus coagulans*; *Bacillus coagulans Hammer*; and *Bacillus brevis* subspecies *coagulans,* and any genetic variants thereof, within a pharmaceutically-acceptable carrier suitable for administration to the gastrointestinal tract of a vertebrate, and wherein said *Bacillus coagulans* strain possesses the ability to increase the solubility and bioavailability of nutritional materials within the gastrointestinal tract of an animal or, preferably, a human.

7. The therapeutic composition of claim 6, wherein said *Bacillus coagulans* bacterial stain is included in said composition in a form selected from a group consisting of a dried bacterial cell mass contained with a flowable concentrate, a stabilized gel, or a stabilized paste.

8. The therapeutic composition of claim 6, wherein said *Bacillus coagulans* bacterial stain is in form of a dried bacterial spore mass, which possess the ability to germinate following administration, contained within a flowable concentrate, a stabilized gel, or a stabilized paste.

9. The therapeutic composition of claim 6, wherein the total administered concentration of said therapeutic composition preferably ranges from approximately 10 milligrams to approximately 10 grams of composition per day, more preferably ranges from approximately 0.1 grams to approximately 5 grams of composition per day, and most preferably ranges from approximately 0.5 grams to approximately 1 gram of composition per day.

10. The therapeutic composition of claim 6, wherein the total administered concentration of *Bacillus coagulans* within said therapeutic composition preferably ranges from approximately $1x10^3$ to approximately $1x10^{12}$ viable bacteria or spores per day, more preferably ranges from approximately $1x10^5$ to approximately $1x10^{10}$ viable bacteria or spores per day, and most preferably ranges from approximately $2x10^7$ to approximately $1x10^{10}$ viable bacteria or spores per day.

11. The therapeutic composition of claim 6, wherein said therapeutic composition additionally contains one or more bifidogenic factors.

12. The therapeutic composition of claims 6 or 11, wherein said bifidogenic factor is a fructo-oligosaccharide (FOS), and wherein the total administered concentration of the bifidogenic factor within said therapeutic composition ranges preferably ranging from approximately 10 milligrams to approximately 20 grams per gram of therapeutic composition per day, more preferably from approximately 50 milligrams to approximately 10 grams per gram of therapeutic composition per day, and most preferably from approximately from approximately 150 milligrams to approximately 1 gram per gram of therapeutic composition per day.

13. The therapeutic composition of claim 6, wherein the physiological location of the administration of said therapeutic composition is selected from a group comprising: buccal; topical; vaginal; nasal; ocular; and otic administration locations.

14. The therapeutic composition of claim 6, wherein said therapeutic composition additionally comprises one or more vitamins selected from the group comprising: Vitamin A, Vitamin D, Vitamin E, Vitamin C, Vitamin B-3, Vitamin B-6, Vitamin B-1, Vitamin B-2, Vitamin B-12, Vitamin K, and Pantothenic Acid.

15. The therapeutic composition of claims 6 or 14, wherein said therapeutic composition additionally comprises one or more vitamins in the following ranges of concentrations and wherein: the concentration of Vitamin A ranges from approximately 50 IU to approximately 50,000 IU and preferably ranges from approximately 2500 IU to approximately 20,000 IU; the concentration of Vitamin D ranges from approximately 4 IU to approximately 15,000 IU and preferably ranges from approximately 50 IU to approximately 1200 IU; Vitamin E, the concentration of Vitamin E ranges from approximately 5 IU to approximately 6000 IU and preferably ranges from approximately 10 IU to approximately 500 IU; the concentration of Vitamin C ranges from approximately 10 milligrams to approximately 25,000 milligrams and preferably ranges from approximately 20 milligrams to approximately 2000 milligrams; the concentration of Vitamin B-3 ranges from approximately 0.25 milligrams to approximately 120 milligrams and preferably ranges from approximately 2 milligrams to approximately 50 milligrams; the concentration of Vitamin B-6 ranges from approximately 0.20 milligrams to

approximately 50 milligrams and preferably ranges from approximately 0.5 milligrams to approximately 10 milligrams; the concentration of Vitamin B-1 ranges from approximately 0.16 milligrams to approximately 160 milligrams and preferably ranges from approximately 0.3 milligrams to approximately 5 milligrams; the concentration of Vitamin B-2 ranges from approximately 0.15 milligrams to approximately 20 milligrams and preferably ranges from approximately 0.5 milligrams to approximately 8 milligrams; the concentration of Vitamin B-12 ranges from approximately 6 micrograms to approximately 1200 micrograms and preferably ranges from approximately 10 micrograms to approximately 360 micrograms; the concentration of Vitamin K ranges from approximately 3 micrograms to approximately 600 micrograms and preferably ranges from approximately 7 micrograms to approximately 120 micrograms; and the concentration of Pantothenic Acid ranges from approximately 0.1 milligrams to approximately 150 milligrams and preferably ranges from approximately 3 milligrams to approximately 40 milligrams.

16. The therapeutic composition of claim 6, wherein said therapeutic composition additionally comprises one or more minerals selected from the group comprising: calcium, magnesium, phosphorus, zinc, manganese, copper, potassium, antimony, barium, berylium, bismuth, boron, bromine, chromium, cobalt, germanium, gold, iodine, iron, lithium, nickel, palladium, platinum, selenium, silicon, silver, strontium, tin, titanium, tungsten, vanadium, and zirconium.

17. The therapeutic composition of claims 6 or 16, wherein said therapeutic composition additionally comprises one or more minerals in the following ranges of concentrations and wherein: the concentration of calcium ranges from approximately 10 milligrams to approximately 25,000 milligrams and preferably ranges from approximately 250 milligrams to approximately 3000 milligrams; the concentration of magnesium ranges from approximately 15 milligrams to approximately 4000 milligrams and preferably ranges from approximately 100 milligrams to approximately 750 milligrams; the concentration of phosphorus ranges from approximately 50 milligrams to approximately 5000 milligrams and preferably ranges from approximately 100 milligrams to approximately 1000 milligrams; the concentration of zinc ranges from approximately 3 milligrams to approximately 100 milligrams and preferably

ranges from approximately 5 milligrams to approximately 60 milligrams; the concentration of manganese ranges from approximately 0.5 milligrams to approximately 50 milligrams and preferably ranges from approximately 1 milligram to approximately 15 milligrams; the concentration of copper ranges from approximately 0.1 milligrams to approximately 20 milligrams and preferably ranges from approximately 0.5 milligrams to approximately 5 milligrams; the concentration of potassium ranges from approximately 0.1 milligrams to approximately 100 milligrams and preferably ranges from approximately 2 milligrams to approximately 25 milligrams; the concentration of antimony ranges from approximately 0.6 micrograms to approximately 600 micrograms and preferably ranges from approximately 1 microgram to approximately 18 micrograms; the concentration of barium ranges from approximately 0.06 micrograms to approximately 60 micrograms and preferably ranges from approximately 1 microgram to approximately 6 micrograms; the concentration of berylium ranges from approximately 0.007 micrograms to approximately 7 micrograms and preferably ranges from approximately 0.001 micrograms to approximately 0.21 micrograms; the concentration of bismuth ranges from approximately 0.015 micrograms to approximately 150 micrograms and preferably ranges from approximately 0.05 micrograms to approximately 0.45 micrograms; the concentration of boron ranges from approximately 0.1micrograms to approximately 100 micrograms and preferably ranges from approximately 1 microgram to approximately 30 micrograms; the concentration of bromine ranges from approximately 0.2 micrograms to approximately 200 micrograms and preferably ranges from approximately 0.5 micrograms to approximately 8 micrograms; the concentration of chromium ranges from approximately 0.1 micrograms to approximately 1000 micrograms and preferably ranges from approximately 25 micrograms to approximately 300 micrograms; the concentration of cobalt ranges from approximately 0.1 micrograms to approximately 100 micrograms and preferably ranges from approximately 0.25 micrograms to approximately 5 micrograms; the concentration of germanium ranges from approximately 10 micrograms to approximately 5000 micrograms and preferably ranges from approximately 100 micrograms to approximately 1000 micrograms; the concentration of gold ranges from approximately 0.015 micrograms to approximately 150 micrograms and preferably ranges from approximately 0.05 micrograms to approximately 15 micrograms; the concentration of iodine ranges from approximately 10 micrograms to

approximately 2500 micrograms and preferably ranges from approximately 50 micrograms to approximately 750 micrograms; the concentration of iron ranges from approximately 12 micrograms to approximately 2500 micrograms and preferably ranges from approximately 50 micrograms to approximately 500 micrograms; the concentration of lithium ranges from approximately 0.3 micrograms to approximately 300 micrograms and preferably ranges from approximately 0.5 micrograms to approximately 15 micrograms; the concentration of nickel ranges from approximately 0.07 micrograms to approximately 70 micrograms and preferably ranges from approximately 0.1 micrograms to approximately 50 micrograms; the concentration of palladium ranges from approximately 0.07 micrograms to approximately 250 micrograms and preferably ranges from approximately 0.2 micrograms to approximately 150 micrograms; the concentration of platinum ranges from approximately 0.015 micrograms to approximately 150 micrograms and preferably ranges from approximately 0.05 micrograms to approximately 15 micrograms; the concentration of selenium ranges from approximately 0.3 micrograms to approximately 300 micrograms and preferably ranges from approximately 0.5 micrograms to approximately 15 micrograms; the concentration of silicon ranges from approximately 6 micrograms to approximately 1200 micrograms and preferably ranges from approximately 10 micrograms to approximately 350 micrograms; the concentration of silver ranges from approximately 5 micrograms to approximately 1000 micrograms and preferably ranges from approximately 15 micrograms to approximately 250 micrograms; the concentration of strontium ranges from approximately 0.4 micrograms to approximately 400 micrograms and preferably ranges from approximately 1 microgram to approximately 15 micrograms; the concentration of tin ranges from approximately 0.07 micrograms to approximately 350 micrograms and preferably ranges from approximately 0.1 micrograms to approximately 5 micrograms; the concentration of titanium ranges from approximately 0.3 micrograms to approximately 300 micrograms and preferably ranges from approximately 1 microgram to approximately 20 micrograms; the concentration of tungsten ranges from approximately 0.07 micrograms to approximately 100 micrograms and preferably ranges from approximately 0.25 micrograms to approximately 20 micrograms; the concentration of vanadium ranges from approximately 0.5 micrograms to approximately 500 micrograms and preferably ranges from approximately 1 microgram to approximately 50 micrograms; and the concentration of zirconium ranges from approximately

0.1 micrograms to approximately 100 micrograms and preferably ranges from approximately 0.25 micrograms to approximately 20 micrograms.

18. The therapeutic composition of claim 6, wherein said therapeutic composition additionally comprises an anti-microbial agent which is selected from the group comprising: antibiotics, anti-fungal agents, anti-viral agents, and anti-yeast agents.

19. A therapeutic composition comprising a therapeutically-effective concentration of the extracellular supernatant derived from a culture of one or more strains of the non-pathogenic, lactic acid-producing bacteria *Bacillus coagulans*; wherein said *Bacillus coagulans* bacterial strain are selected from a group comprising *Bacillus coagulans*; *Bacillus coagulans Hammer*; and *Bacillus brevis* subspecies *coagulans*, and any genetic variants thereof, within a pharmaceutically-acceptable carrier suitable for administration to the gastrointestinal tract of a vertebrate, and wherein said *Bacillus coagulans* strain possesses the ability to increase the solubility and bioavailability of nutritional materials within the gastrointestinal tract of an animal or, preferably, a human.

20. A method of increasing the solubility and bioavailability of nutritional materials within the gastrointestinal tract of an animal or, preferably, a human, comprising the administration of a therapeutically-effective concentration of one or more non-pathogenic, lactic acid-producing bacterial species or strains within a pharmaceutically-acceptable carrier suitable for administration to the gastrointestinal tract of a vertebrate, wherein said lactic acid-producing bacterial species or strain possesses the ability to increase the solubility and bioavailability of nutritional materials within the gastrointestinal tract of an animal or, preferably, a human.

21. The method of claim 20, wherein said non-pathogenic, lactic acid-producing bacterial species or strain is a *Bacillus* bacterial species which is selected from a group comprising: *Bacillus coagulans*; *Bacillus coagulans Hammer*; *Bacillus brevis* subspecies *coagulans*, *Bacillus subtilis*, *Bacillus uniflagellatus*, *Bacillus lateropsorus*, *Bacillus laterosporus* BOD, *Bacillus megaterium*, *Bacillus polymyxa*, *Bacillus licheniformis*, *Bacillus pumilus*, and *Bacillus sterothermophilus*, and any genetic variants thereof.

22. The method of claim 20, wherein said non-pathogenic, lactic acid-producing bacterial species or strain is a *Lactobacillus* bacterial species which is selected from a group comprising: *Lactobacillus acidophilus*, *Lactobacillus casei*, *Lactobacillus DDS-1*, *Lactobacillus GG*, *Lactobacillus rhamnosus*, *Lactobacillus plantarum*, *Lactobacillus reuteri*, *Lactobacillus gasserii*, *Lactobacillus fensenii*, *Lactobacillus delbruekii*, *Lactobacillus, bulgaricus*, *Lactobacillus salivarius* and *Lactobacillus sporogenes* (also designated as *Bacillus coagulans*), and any genetic variants thereof.

23. The method of claim 20, wherein said non-pathogenic, lactic acid-producing bacterial species or strain is a *Sporolactobacillus* bacterial species which is selected from a group comprising: all *Sporolactobacillus* species, for example, *Sporolactobacillus* P44, and any genetic variants thereof.

24. The method of claim 20, wherein said non-pathogenic, lactic acid-producing bacterial species or strain is a *Bifidiobacterium* bacterial species which is selected from a group comprising: *Bifidiobacterium adolescentis*, *Bifidiobacterium animalis*, *Bifidiobacterium bifidum*, *Bifidiobacterium bifidus*, *Bifidiobacterium breve*, *Bifidiobacterium infantis*, *Bifidiobacterium infantis*, *Bifidiobacterium longum*, and any genetic variants thereof.

25. A method of increasing the solubility and bioavailability of nutritional materials within the gastrointestinal tract of an animal or, preferably, a human, comprising the administration of a therapeutically-effective concentration of one or more strains of the non-pathogenic, lactic acid-producing bacteria *Bacillus coagulans*; wherein said *Bacillus coagulans* bacterial strain are selected from a group comprising *Bacillus coagulans*; *Bacillus coagulans Hammer*; and *Bacillus brevis* subspecies *coagulans,* and any genetic variants thereof, within a pharmaceutically-acceptable carrier suitable for administration to the gastrointestinal tract of a vertebrate, and wherein said *Bacillus coagulans* strain possesses the ability to increase the solubility and bioavailability of nutritional materials within the gastrointestinal tract of an animal or, preferably, a human.

26. The method of claim 25, wherein said *Bacillus coagulans* bacterial stain is included in said composition in a form selected from a group consisting of a dried bacterial cell mass contained with a flowable concentrate, a stabilized gel, or a stabilized paste.

27. The method of claim 25, wherein said *Bacillus coagulans* bacterial stain is in form of a dried bacterial spore mass, which possess the ability to germinate following administration, contained within a flowable concentrate, a stabilized gel, or a stabilized paste.

28. The method of claim 25, wherein the total administered concentration of said therapeutic composition preferably ranges from approximately 10 milligrams to approximately 10 grams of composition per day, more preferably ranges from approximately 0.1 grams to approximately 5 grams of composition per day, and most preferably ranges from approximately 0.5 grams to approximately 1 gram of composition per day.

29. The method of claim 25, wherein the total administered concentration of *Bacillus coagulans* within said therapeutic composition preferably ranges from approximately $1x10^3$ to approximately $1x10^{12}$ viable bacteria or spores per day, more preferably ranges from approximately $1x10^5$ to approximately $1x10^{10}$ viable bacteria or spores per day, and most preferably ranges from approximately $2x10^7$ to approximately $1x10^{10}$ viable bacteria or spores per day.

30. The method of claim 25, wherein said therapeutic composition additionally contains one or more bifidogenic factors.

31. The method of claims 25 or 30, wherein said bifidogenic factor is a fructo-oligosaccharide (FOS), and wherein the total administered concentration of the bifidogenic factor within said therapeutic composition ranges preferably ranging from approximately 10 milligrams to approximately 20 grams per gram of therapeutic composition per day, more preferably from approximately 50 milligrams to approximately 10 grams per gram of therapeutic composition per day, and most preferably from approximately from approximately 150 milligrams to approximately 1 gram per gram of therapeutic composition per day.

32. The method of claim 25, wherein the physiological location of the administration of said therapeutic composition is selected from a group comprising: buccal; topical; vaginal; nasal; ocular; and otic administration locations.

33. The method of claim 25, wherein said therapeutic composition additionally comprises one or more vitamins selected from the group comprising: Vitamin A, Vitamin D,

Vitamin E, Vitamin C, Vitamin B-3, Vitamin B-6, Vitamin B-1, Vitamin B-2, Vitamin B-12, Vitamin K, and Pantothenic Acid.

34. The method of claims 25 or 33, wherein said therapeutic composition additionally comprises one or more vitamins in the following ranges of concentrations and wherein: the concentration of Vitamin A ranges from approximately 50 IU to approximately 50,000 IU and preferably ranges from approximately 2500 IU to approximately 20,000 IU; the concentration of Vitamin D ranges from approximately 4 IU to approximately 15,000 IU and preferably ranges from approximately 50 IU to approximately 1200 IU; Vitamin E, the concentration of Vitamin E ranges from approximately 5 IU to approximately 6000 IU and preferably ranges from approximately 10 IU to approximately 500 IU; the concentration of Vitamin C ranges from approximately 10 milligrams to approximately 25,000 milligrams and preferably ranges from approximately 20 milligrams to approximately 2000 milligrams; the concentration of Vitamin B-3 ranges from approximately 0.25 milligrams to approximately 120 milligrams and preferably ranges from approximately 2 milligrams to approximately 50 milligrams; the concentration of Vitamin B-6 ranges from approximately 0.20 milligrams to approximately 50 milligrams and preferably ranges from approximately 0.5 milligrams to approximately 10 milligrams; the concentration of Vitamin B-1 ranges from approximately 0.16 milligrams to approximately 160 milligrams and preferably ranges from approximately 0.3 milligrams to approximately 5 milligrams; the concentration of Vitamin B-2 ranges from approximately 0.15 milligrams to approximately 20 milligrams and preferably ranges from approximately 0.5 milligrams to approximately 8 milligrams; the concentration of Vitamin B-12 ranges from approximately 6 micrograms to approximately 1200 micrograms and preferably ranges from approximately 10 micrograms to approximately 360 micrograms; the concentration of Vitamin K ranges from approximately 3 micrograms to approximately 600 micrograms and preferably ranges from approximately 7 micrograms to approximately 120 micrograms; and the concentration of Pantothenic Acid ranges from approximately 0.1 milligrams to approximately 150 milligrams and preferably ranges from approximately 3 milligrams to approximately 40 milligrams.

35. The method of claim 25, wherein said therapeutic composition additionally comprises one or more minerals selected from the group comprising: calcium, magnesium,

phosphorus, zinc, manganese, copper, potassium, antimony, barium, berylium, bismuth, boron, bromine, chromium, cobalt, germanium, gold, iodine, iron, lithium, nickel, palladium, platinum, selenium, silicon, silver, strontium, tin, titanium, tungsten, vanadium, and zirconium.

36. The method of claims 25 or 35, wherein said therapeutic composition additionally comprises one or more minerals in the following ranges of concentrations and wherein: the concentration of calcium ranges from approximately 10 milligrams to approximately 25,000 milligrams and preferably ranges from approximately 250 milligrams to approximately 3000 milligrams; the concentration of magnesium ranges from approximately 15 milligrams to approximately 4000 milligrams and preferably ranges from approximately 100 milligrams to approximately 750 milligrams; the concentration of phosphorus ranges from approximately 50 milligrams to approximately 5000 milligrams and preferably ranges from approximately 100 milligrams to approximately 1000 milligrams; the concentration of zinc ranges from approximately 3 milligrams to approximately 100 milligrams and preferably ranges from approximately 5 milligrams to approximately 60 milligrams; the concentration of manganese ranges from approximately 0.5 milligrams to approximately 50 milligrams and preferably ranges from approximately 1 milligram to approximately 15 milligrams; the concentration of copper ranges from approximately 0.1 milligrams to approximately 20 milligrams and preferably ranges from approximately 0.5 milligrams to approximately 5 milligrams; the concentration of potassium ranges from approximately 0.1 milligrams to approximately 100 milligrams and preferably ranges from approximately 2 milligrams to approximately 25 milligrams; the concentration of antimony ranges from approximately 0.6 micrograms to approximately 600 micrograms and preferably ranges from approximately 1 microgram to approximately 18 micrograms; the concentration of barium ranges from approximately 0.06 micrograms to approximately 60 micrograms and preferably ranges from approximately 1 microgram to approximately 6 micrograms; the concentration of berylium ranges from approximately 0.007 micrograms to approximately 7 micrograms and preferably ranges from approximately 0.001 micrograms to approximately 0.21 micrograms; the concentration of bismuth ranges from approximately 0.015 micrograms to approximately 150 micrograms and preferably ranges from approximately 0.05 micrograms to approximately 0.45 micrograms; the concentration of boron ranges from approximately 0.1micrograms to approximately 100 micrograms and preferably

ranges from approximately 1 microgram to approximately 30 micrograms; the concentration of bromine ranges from approximately 0.2 micrograms to approximately 200 micrograms and preferably ranges from approximately 0.5 micrograms to approximately 8 micrograms; the concentration of chromium ranges from approximately 0.1 micrograms to approximately 1000 micrograms and preferably ranges from approximately 25 micrograms to approximately 300 micrograms; the concentration of cobalt ranges from approximately 0.1 micrograms to approximately 100 micrograms and preferably ranges from approximately 0.25 micrograms to approximately 5 micrograms; the concentration of germanium ranges from approximately 10 micrograms to approximately 5000 micrograms and preferably ranges from approximately 100 micrograms to approximately 1000 micrograms; the concentration of gold ranges from approximately 0.015 micrograms to approximately 150 micrograms and preferably ranges from approximately 0.05 micrograms to approximately 15 micrograms; the concentration of iodine ranges from approximately 10 micrograms to approximately 2500 micrograms and preferably ranges from approximately 50 micrograms to approximately 750 micrograms; the concentration of iron ranges from approximately 12 micrograms to approximately 2500 micrograms and preferably ranges from approximately 50 micrograms to approximately 500 micrograms; the concentration of lithium ranges from approximately 0.3 micrograms to approximately 300 micrograms and preferably ranges from approximately 0.5 micrograms to approximately 15 micrograms; the concentration of nickel ranges from approximately 0.07 micrograms to approximately 70 micrograms and preferably ranges from approximately 0.1 micrograms to approximately 50 micrograms; the concentration of palladium ranges from approximately 0.07 micrograms to approximately 250 micrograms and preferably ranges from approximately 0.2 micrograms to approximately 150 micrograms; the concentration of platinum ranges from approximately 0.015 micrograms to approximately 150 micrograms and preferably ranges from approximately 0.05 micrograms to approximately 15 micrograms; the concentration of selenium ranges from approximately 0.3 micrograms to approximately 300 micrograms and preferably ranges from approximately 0.5 micrograms to approximately 15 micrograms; the concentration of silicon ranges from approximately 6 micrograms to approximately 1200 micrograms and preferably ranges from approximately 10 micrograms to approximately 350 micrograms; the concentration of silver ranges from approximately 5 micrograms to approximately 1000

micrograms and preferably ranges from approximately 15 micrograms to approximately 250 micrograms; the concentration of strontium ranges from approximately 0.4 micrograms to approximately 400 micrograms and preferably ranges from approximately 1 microgram to approximately 15 micrograms; the concentration of tin ranges from approximately 0.07 micrograms to approximately 350 micrograms and preferably ranges from approximately 0.1 micrograms to approximately 5 micrograms; the concentration of titanium ranges from approximately 0.3 micrograms to approximately 300 micrograms and preferably ranges from approximately 1 microgram to approximately 20 micrograms; the concentration of tungsten ranges from approximately 0.07 micrograms to approximately 100 micrograms and preferably ranges from approximately 0.25 micrograms to approximately 20 micrograms; the concentration of vanadium ranges from approximately 0.5 micrograms to approximately 500 micrograms and preferably ranges from approximately 1 microgram to approximately 50 micrograms; and the concentration of zirconium ranges from approximately 0.1 micrograms to approximately 100 micrograms and preferably ranges from approximately 0.25 micrograms to approximately 20 micrograms.

37. The method of claim 25, wherein said therapeutic composition additionally comprises an anti-microbial agent which is selected from the group comprising: antibiotics, anti-fungal agents, anti-viral agents, and anti-yeast agents.

38. A method of increasing the solubility and bioavailability of nutritional materials within the gastrointestinal tract of an animal or, preferably, a human, comprising the administration of a therapeutically-effective concentration of the extracellular supernatant derived from a culture of one or more strains of the non-pathogenic, lactic acid-producing bacteria *Bacillus coagulans*; wherein said *Bacillus coagulans* bacterial strain are selected from a group comprising *Bacillus coagulans*; *Bacillus coagulans Hammer*; and *Bacillus brevis* subspecies *coagulans*, and any genetic variants thereof, within a pharmaceutically-acceptable carrier suitable for administration to the gastrointestinal tract of a vertebrate, and wherein said *Bacillus coagulans* strain possesses the ability to increase the solubility and bioavailability of nutritional materials within the gastrointestinal tract of an animal or, preferably, a human.

39. A therapeutic composition comprising one or more *Bacillus* bacterial species or strains within a pharmaceutically-acceptable carrier suitable for oral administration to the gastrointestinal tract of a vertebrate, wherein said *Bacillus coagulans* bacterial strain is capable of growing at a temperature of approximately 30°C to approximately 65°C, produces L(+) dextrorotatory lactic acid, produces spores resistant to temperatures of up to approximately 90°C, and probiotic exhibits activity which increases the solubility and bioavailability of nutritional materials within the gastrointestinal tract of animals or, preferably, humans.

40. The therapeutic composition of claim 39, wherein said probiotic activity results from the vegetative growth of the *Bacillus* bacterial species or strains.

41. The therapeutic composition of claim 48, wherein said probiotic activity results from an extracellular product produced by the isolated *Bacillus* bacterial species or strains..

42. A method of increasing the solubility and bioavailability of vitamins and minerals within the gastrointestinal tract of an animal or, preferably, a human, comprising the administration of a therapeutically-effective concentration of one or more *Bacillus* bacterial species or strains within a pharmaceutically-acceptable carrier suitable for oral administration to the gastrointestinal tract of a vertebrate, wherein said *Bacillus coagulans* bacterial strain is capable of growing at a temperature of approximately 30°C to approximately 65°C, produces L(+) dextrorotatory lactic acid, produces spores resistant to temperatures of up to approximately 90°C, and exhibits probiotic activity which increases the solubility and bioavailability of nutritional materials within the gastrointestinal tract of animals or, preferably, humans.

43. The method of claim 42, wherein said probiotic activity results from the vegetative growth of the *Bacillus* bacterial species or strains.

44. The method of claim 42, wherein said probiotic activity results from an extracellular product produced by the isolated *Bacillus* bacterial species or strains.